Lakehead UNIVERSITY | Department of Geology

Hi all,

The newly formed *Mechanics of Fault Systems* research group at Lakehead University is seeking at least two MSc candidates to begin in the fall of 2022. Details about the individual projects can be found below. Our group broadly studies the mechanics of fault systems from the field- to nano-scale to better understand the earthquake cycle, the movement of tectonic plates, and the structural controls of mineral resources.

Each candidate will receive a stipend of ~$21,000 per year as well as a Graduate Assistantship which covers tuition costs. Candidates may also be eligible to apply for other competitive grants and scholarships. Students will be trained in digital field mapping techniques (employing drones, structure-from-motion photogrammetry, iPads, the StraboSpot data system) and microanalytical techniques (including optical microscopy, scanning and transmission electron microscopy, FTIR, fluid inclusion analysis) which are all accessible to our group at Lakehead.

My group, the Geology Department, and Lakehead University are all committed to creating a diverse and inclusive environment, and we welcome applications from all qualified individuals including women, racialized persons, Indigenous people, persons with disabilities, and other equity-seeking groups. The only requirements are an undergraduate degree at the time of appointment (by fall of 2022) and a keen interest in geology. Interested students should contact Noah (noah.phillips@lakeheadu.ca) as soon as possible (by December 15th at the latest) with a statement of interest. I will respond to all emails as I receive them. Informal interviews will occur in late December to early January over zoom and all candidates will be notified by mid-January. Preference will be given to Canadian citizens due to tuition policies at Lakehead University.

All the best and I look forward to hearing from interested folks soon,

Noah John Phillips, PhD (he, him)
Assistant Professor
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website

Lakehead University is located on the traditional lands of the Fort William First Nation.

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MSc 1: Determining the kinematics, micromechanics, and deformation conditions of faults and shear zones at the Lac Des Iles palladium mine, ON

This project, in partnership with Impala Canada, will examine the kinematics, micromechanics, and deformation conditions of faults and shear zones at the Lac Des Iles palladium mine. The student will be co-advised by Dr. Pete Hollings (Lakehead) and will work closely with Dr. Lionnel Djon (Impala). There is potential for the successful candidate to be employed by Impala Canada for the summer of 2022 (if desired).

The deposit is hosted within the mafic to ultramafic Lac des Iles Intrusive complex, ~85 km north of Thunder Bay. The candidate will use underground geological mapping and core logging combined with microanalytical techniques to characterize the ore hosting shear zone and two faults which offset the orebody. The student will characterize the kinematics and conditions of deformation through a detailed microstructural study of each fault and shear zone.

MSc 2: Open project on faults and shear zones

This is an open project where the topic will be decided through talks between the candidate and myself. Possible projects include:

- *Determining the kinematics and deformation mechanisms of Archean, paleo-subduction interfaces in the Quetico accretionary complex*
- *Quantifying the strengths of strike-slip shear zones through detailed field and microstructural studies*
- *Characterizing the rheology (deformation mechanisms, slip systems, strength) of a poorly understood mineral or rock type*

There is substantial flexibility regarding the scope of the project, and I am committed to tailoring the project to the needs and long-term goals of the student. The scope of the project and goals will be established before the candidate starts at Lakehead.

***For more information contact**: Dr. Noah Phillips, Department of Geology, Lakehead University, Thunder Bay, ON, Canada*
Email: noah.phillips@lakeheadu.ca Web page: https://structuralgeo.github.io/